

TANYPUS DYARI COQUILLET: PUPA AND ADULT EXCLUSION.

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WHILE walking along the edge of a small mountain pond near the town of Blacksburg, Virginia, March 14, 1903, my attention was attracted to numerous pupal casts scattered over the surface of the water, especially numerous along the margin of the pond, clinging to pieces of old logs and fence-rails extending out into the water.

Simultaneously with this, grayish, slenderly built flies were occasionally seen rising from the water, and were at once connected with the floating exuviae. A few moments later they were observed emerging from their pupal skins.

Pupae.—The pupae locomote by quick, jerky, motions of the abdomen, the caudal end of which is forked; violent outward movements send them forward in a kind of a jerky revolving motion not unlike an acrobat turning many somersaults from some high position, though, of course, the pupae do not actually revolve, but apparently so.

They resemble mosquito pupae; light brown, shaded along the stigmatal line with olivaceous; eyes prominent, oval, deep brown; two brownish siphuncles are borne on the dorso-lateral aspect of thorax, one on each side; the latter protrude from the water when the insect takes its position at the surface of the water, which is often the case.

Normally, the pupae remain at the bottom of the pond, near the edge, under sticks and leaves, and when the latter are disturbed, shooting out in all directions. They are often seen at the surface, beside logs, where they rest with the abdomen curved under against the head and thorax.

Emergence takes place from a longitudinal rent in the thorax, and the fly uses the pupal skin to a certain extent as a float or support while its body and wings are drying. This, of course, is excepted, if it can find other support, which is often the case, as when the pupa has drifted against a log or a leaf, the excluded fly then abandoning the pupal skin for the more substantial support afforded by whatever object it may have drifted against. If in open water, and the wind is blowing, the fly perchance takes a short cruise, before it finally rises.

Exclusions — Pupa observed in about $\frac{1}{2}$ inch of water; very restless, and much paler than normal; lay quiet for awhile, extended full length and gave violent jerks with abdomen as if straining to break pupal skin. Very restless, then listless; floated about on surface of water, and finally came to rest against a bunch of grass growing in the water.

A well defined suture along the thoracic meson; at 12 : 46 P. M., with great suddenness, thorax parted along the meson, and the head and thorax shot out, as it were. In 50 seconds the wings and greater part of body were out, while in 5 seconds more the fly was resting on the surface of the water completely excluded. At 12 : 48 (2 minutes), the pupal skin was discarded and thrown aside, and the adult floated off. During the interval of time between the exclusion of the wings and the discarding of the pupal skin, the fly was simply resting on the surface of the water, the tip of the abdomen being supported by the cast skin. After floating a short distance, the body rapidly drying, it flew several yards and alighted on the water, and at 12 : 50 P. M. it again flew a short distance to the shady side of a log in the water. Took flight at 12 : 56 P. M.

In another case exclusion occupied six minutes, and the fly flew away eight minutes afterwards. The pupa was at first cruising over the water, the half excluded wings acting as sails, until it came to rest against a half submerged log, upon which the adult crawled as soon as free from the pupal skin.

Pupae and adults were present until April 28.

A SUPPOSED CYNIPID GALL FROM THE ROOTS OF GOLDENROD (*Solidago*).

Desc. Gall. — Flattened, clustered, fleshy, bud-like, root-galls; dark olive green, tinged with garnet; soft, flabby to touch; multicellular, the larval cells long; taste neutral, like parsley; tuber-like when large.

Diameter: 4-11 mm. (single galls.)

Locality: Ridgeley, W. Virginia.

History. — Occasional; larvae and parasitic pupae present; no adults obtained;
22 Aug. 1903.

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